

Amendments of the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Currently Amended) An apparatus for routing content through a network based on semantics of the content being routed comprising:

a computer comprising:

at least one network interface card;

a signaling agent;

a forwarding agent that forwards a semantic packet to a destination based at least on the semantics of the content of the semantic packet;

a load manager; and

a semantic profile manager that operates on semantic profiles to identify areas of overlapping interest in receiving content between the semantic profiles, wherein the semantic profiles include information that identifies users' interest in receiving content.

2. (Currently Amended) The apparatus as in claim 1 wherein

the signaling agent handles communication between the apparatus and other routing apparatus and determines the connectivity to the other routing apparatus;

[the forwarding agent forwards incoming semantic packets;]

the load manager manages a processing load of the routing apparatus; and

the profile manager aggregates semantic profiles.

3. (Original) The apparatus as in claim 2 wherein the semantic profiles are aggregated into ontological trees that are used to form routing tables.
4. (Original) The apparatus as in claim 3 wherein the load manager manages the processing load of the routing apparatus by reducing precision in the aggregated semantic profiles.
5. (Currently Amended) The apparatus as in claim 3 wherein the signaling agent sends the aggregated semantic profiles to the other routing apparatus to update [the] routing data of the other routing apparatus.
6. (Original) The apparatus as in claim 1 wherein the profile manager, the load manager and the signaling agent interact to balance processing load of the routing apparatus.
7. (Original) The apparatus as in claim 1 wherein the load manager manages processing load partly by delegating the processing load of the routing apparatus to neighboring routing apparatus.
8. (Original) The apparatus as in claim 1 wherein the load manager interacts with other routing apparatus and a semantic log keeper to become aware of current topology of the network.
9. (Currently Amended) The apparatus as in claim 1 wherein the forwarding agent [is composed of] comprises a routing cache and routing data.
10. (Original) The apparatus as in claim 9 wherein the forwarding agent routes incoming semantic packets to their destination by using information included in the routing cache.
11. (Canceled)
12. (Currently Amended) A method for routing content through a network based on semantics of the content being routed comprising the steps of:

receiving a semantic profile including information that identifies a user's interest in receiving content;

[aggregating] operating on the semantic profile to identify areas of overlapping interests in receiving content between the semantic profile and [with] other semantic profiles, wherein the other semantic profiles include information that identifies other users' interest in receiving content;

aggregating the semantic profiles using the identified areas of overlapping interests;

receiving a semantic packet; and

routing the semantic packet to a destination based at least on a comparison between the semantic content included in the semantic packet and the aggregated semantic profiles.

13. (Original) The method as in claim 12 further comprising classifying the content before creating the semantic packet.

14. (Original) The method as in claim 12 further comprising filtering the routed semantic packet before reaching a content consumer.

15. (Original) The method as in claim 12 wherein the semantic packet comprises a header and content.

16. (Original) The method as in claim 15 wherein the header is in a networking community programming language.

17. (Original) The method as in claim 15 wherein the header is in XML markup language.

18. (Original) The method as in claim 15 wherein the header of the semantic packet comprises a preamble, at least one semantic signature, and at least one semantic descriptor.

19. (Original) The method as in claim 18 wherein the semantic descriptors of the semantic packet further comprises environment specific information.
20. (Original) The method as in claim 18 wherein the semantic descriptors of the semantic packet further comprises customized information.
21. (Original) The method as in claim 18 further comprising a forwarding agent which routes the semantic packet through the network using the semantic signature.
22. (Original) The method as in claim 12 wherein said method is deployed as an overlay network on top of conventional network routers.
23. (Original) The method as in claim 22 further comprising sending semantic packets through the network routers by tunneling.
24. (Canceled)
25. (Canceled)
26. (Canceled)
27. (Original) The method as in claim 12 wherein the semantic profile comprises:
 - a preamble;
 - at least one profile signature;
 - at least one profile descriptor;
 - information about a lifetime of the semantic profile;
 - authentication data; and
 - a command field that instructs a semantic router.

28. (Original) The method as in claim 27 wherein the preamble of the semantic profile includes at least one semantic descriptor.
29. (Original) The method as in claim 27 wherein the profile descriptor is in a networking community programming language.
30. (Original) The method as in claim 27 wherein the profile descriptor is in XML markup language.
31. (Original) The method as in claim 27 wherein the authentication data is used to verify a user.
32. (Original) The method as in claim 27 wherein the semantic profile further comprises information that allows the semantic network to act as a firewall by controlling who has access to content.
33. (Original) The method as in claim 27 further comprising a policy profile that allows the network to determine content received by a content consumer.
34. (Original) The method as in claim 12 wherein the step of aggregating the semantic profile comprises the steps of
 - parsing a profile file;
 - creating and populating a node for a profile tree on every information element in the profile file;
 - creating a fact associated with the node;
 - reading in a rule file, wherein rules are written to compare name, value, parent, label and children of the node;

running a rule engine which will fire the rules based on the facts;

calling a corresponding method that transforms at least one node in the profile tree when the fact fires and attaching methods on subtrees for transformations.

35. (Original) The method of claim 34 where the facts and rules are represented in Jess system and the methods are represented in Java programming language.

36. (Canceled)

37. (Canceled)

38. (Canceled)

39. (Currently Amended) A method for announcing content comprising:

receiving a content profile wherein the content profile includes information identifying content available from a content provider;

operating on the content profile to identify areas of overlapping content between the content profile and other content profiles, wherein the other content profiles include information that identifies content available from other content providers;

aggregating the content profile with the other content profiles using the identified areas of overlapping content;

distributing the aggregated content profiles into a semantic network;

storing the aggregated content profiles at semantic routers within the semantic network;

receiving seek packets wherein the seek packets include at least one request for content;

and

routing the seek packets based [in part] at least on the aggregated content profiles stored at semantic routers and the requested content included in the seek packet.

40. (Currently Amended) The method as in claim 39 wherein said seek packets include[s] a return address.

41. (Original) The method as in claim 39 further comprising the step of pushing content to content consumers.

42. (Currently Amended) A semantic router comprising:

a profile manager that aggregates semantic profiles by operating on the semantic profiles to identify areas of overlapping interest in receiving content between the semantic profiles, wherein the semantic profiles include information that identifies users' interest in receiving content; and

a forwarding agent that forwards semantic packets that includes semantic content to neighboring semantic router based at least on the aggregated semantic profiles and the semantic content of the semantic packet.

43. (Currently Amended) A multiprotocol router comprising:

a routing engine;

a network routing engine; [and]

a profile manager that aggregates semantic profiles by operating on the semantic profiles to identify areas of overlapping interests in receiving content between the semantic profiles, wherein the semantic profiles include information that identifies users' interest in receiving content; and

a semantic packet routing engine that routes semantic packets that includes semantic content to a destination based at least on the aggregated semantic profiles and the semantic content of the semantic packet.

44. (Currently Amended) An apparatus for routing content through a network having:
- at least one semantic router, each semantic router connected to a network comprising:
 - means for receiving a semantic packet;
 - means for receiving a semantic profile including information that identifies a user's interest in receiving content;
 - means for operating on the semantic profile to identify areas of overlapping interests in receiving content between the semantic profile and other semantic profiles, wherein the other semantic profiles include information that identifies other users' interest in receiving content;
 - means for aggregating the semantic profile with the other semantic profiles using the identified areas of overlapping interests;
 - means for routing content based at least on the semantic content included in the semantic packet and the aggregated semantic profiles to at least a next destination.

45. (Currently Amended) An article of manufacture comprising a computer readable medium that stores computer executable instructions for causing a computer system to:

receive a semantic profile including information that identifies a user's interest in receiving content;

[aggregate] operate on the semantic profile to identify areas of overlapping interests in receiving content between the semantic profile and [with] other semantic profiles, wherein the

other semantic profiles include information that identifies other users' interest in receiving content;

aggregate the semantic profiles using the identified areas of overlapping interests;

receive semantic packets having semantic content; and

use at least the aggregated semantic profiles and the semantic content of the semantic packets to route the received semantic packets through a network to at least a next destination address.

46. (Canceled)

47. (Currently Amended) A computer-implemented method of retrieving information comprising the following steps:

receiving a semantic profile including information that identifies a user's interest in receiving content;

[aggregating] operating on the semantic profile to identify areas of overlapping interests in receiving content between the semantic profile and [with] other semantic profiles, wherein the other semantic profiles include information that identifies other users' interest in receiving content;

aggregating the semantic profiles using the identified areas of overlapping interests;

receiving a semantic packet; and

routing the semantic packet to a destination based at least on a comparison between the semantic content included in the semantic packet and the aggregated semantic profiles.

48. (Currently Amended) A scalable semantic network comprising:

a plurality of semantic routers distributed among [the] nodes of the semantic network, wherein each of the plurality of semantic routers having a plurality of ports, said ports having other semantic routers connected thereto, wherein a message is received by a current semantic router via one semantic router via one of said plurality of ports and sent along a preferred route to a next semantic routers via at least one of said plurality of ports;

wherein each semantic router comprises ontological trees that determine the next semantic routers to which to route a message based at least on the content of the message; and

wherein the ontological trees are based on an aggregation of semantic profiles created by operating on received semantic profiles to identify areas of overlapping interests in receiving content between the semantic profiles, wherein the semantic profiles include information that identifies users' interest in receiving content.

49. (New) The method as in claim 12 further comprising the step of distributing the aggregated semantic profiles into a semantic network.

50. (New) The semantic router as in claim 42 wherein the forwarding agent distributes the aggregated content profiles into a semantic network.

51. (New) The multiprotocol router as in claim 43 further comprising a forwarding agent distributes the aggregated content profiles into a semantic network.

52. (New) The apparatus as in claim 44 further comprising means for distributing the aggregated content profiles into a semantic network.

53. (New) The article of manufacture of claim 45 further comprising computer executable instructions for causing a computer to distribute the aggregated content profiles into a semantic network.

54. (New) The computer implemented method as in claim 47 further comprising the step of distributing the aggregated content profiles into a semantic network.

55. (New) A method for announcing and retrieving content comprising the steps of:

receiving a content profile wherein the content profile includes information identifying content available from a content provider;

operating on the content profile to identify areas of overlapping content between the content profile and other content profiles, wherein the other content profiles include information that identifies content available from other content providers;

aggregating the content profile with the other content profiles using the identified areas of overlapping content;

distributing the aggregated content profiles into a semantic network;

storing the aggregated content profiles at semantic routers within the semantic network;

receiving seek packets wherein the seek packets include at least one request for content;

creating a semantic profile comprising an interest in specified content;

propagating the semantic profile to at least one of the semantic routers;

operating on the semantic profile to identify areas of overlapping interests in receiving the specified content between the semantic profile and other semantic profiles, wherein the other semantic profiles include information that identifies other users' interest in receiving the specified content;

aggregating the semantic profile with the other semantic profiles on the at least one of the semantic routers using the identified areas of overlapping interests;

propagating the aggregated semantic profiles through the semantic network;

routing the seek packets to content providers based at least on the aggregated content profiles stored at semantic routers and the requested content included in the seek packet;

receiving a semantic packet wherein the semantic packet includes content in response to the seek packet; and

routing the semantic packet to a destination based at least on a comparison between the semantic content included in the semantic packet and the aggregated semantic profiles.